

Name Kelly

## Chemistry 313 - Chapter 4 Review

1. Which of the following are properties of ionic compounds? *Circle all that apply*

Soluble in water	Does not conduct electricity	High melting point	Well organize, tightly bound electrons
Can be an electrolyte	Form crystals	Weak attractive forces	Hard, rough, brittle solids
Interparticle forces hold particles together	Does not dissolve in water	Conduct electricity when melted or dissolved in water	Liquids or gases at room temperature

2. Which of the following are properties of covalent compounds? *Circle all that apply*

Soluble in water	Does not conduct electricity	High melting point	Well organize, tightly bound electrons
Can be an electrolyte	Form crystals	Weak attractive forces	Hard, rough, brittle solids
Interparticle forces hold particles together	Does not dissolve in water	Conduct electricity when melted or dissolved in water	Liquids or gases at room temperature

3. What conclusions can you make about compounds and the elements that make them up?

Compounds have very different Physical and Chemical properties than the elements that they are made of.

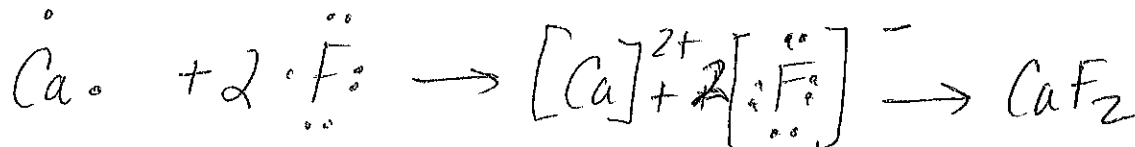
4. Identify the type of compound as ionic or covalent by placing a check mark in the appropriate column.

Compound	Ionic	Covalent
CF <sub>4</sub>		✓
Fe <sub>2</sub> O <sub>3</sub>	✓	
KBr	✓	
SO <sub>3</sub>		✓
(NH <sub>4</sub> ) <sub>3</sub> P	✓	

5. Indicate how many electrons each atom gains or loses and the charge on the resulting ion.

Atom	Gain	Lose	Ion (symbol and charge)
Calcium		2	$\text{Ca}^{2+}$
nitrogen	3		$\text{N}^{3-}$
Sulfur	2		$\text{S}^{2-}$
Aluminum		3	$\text{Al}^{3+}$

6. Write the ionic equation for the compound that is formed when calcium combines with fluorine.



7. What are the two ways that atoms can achieve the octet rule during bonding? *State what kinds of compounds result from your two answers.*

covalent bonding - sharing electrons  
 ionic bonding - transfer of electrons

8. Regardless of the way in which atoms combine to form compounds what must happen between atoms for compounds to form?

*The atoms must collide*

9. Fill in the following table.

Compound	Cation	Anion	Name
$\text{K}_2\text{O}$	$\text{K}^{+}$	$\text{O}^{2-}$	Potassium Oxide
$\text{Fe}_2(\text{Cr}_2\text{O}_7)_3$	$\text{Fe}^{3+}$	$\text{Cr}_2\text{O}_7^{2-}$	Iron(III) dichromate
$\text{Li}_3\text{PO}_4$	$\text{Li}^{+}$	$\text{PO}_4^{3-}$	Lithium phosphate
$\text{Ba}(\text{OH})_2$	$\text{Ba}^{2+}$	$\text{OH}^{-}$	Barium Hydroxide
$\text{Pb}(\text{ClO}_4)_4$	$\text{Pb}^{4+}$	$\text{ClO}_4^{-}$	Lead(IV) Perchlorate
$\text{Be}(\text{CN})_2$	$\text{Be}^{2+}$	$\text{CN}^{-}$	Beryllium cyanide
$\text{Ag}_3\text{N}$	$\text{Ag}^{+}$	$\text{N}^{3-}$	Silver Nitride
$\text{Mg}(\text{NO}_3)_2$	$\text{Mg}^{2+}$	$\text{NO}_3^{-}$	Magnesium Nitrate
$\text{Cu}_2\text{SO}_3$	$\text{Cu}^{+}$	$\text{SO}_3^{2-}$	Copper I Sulfite
$\text{Al}(\text{C}_2\text{H}_3\text{O}_2)_3$	$\text{Al}^{3+}$	$\text{C}_2\text{H}_3\text{O}_2^{-}$	Aluminum acetate